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ABSTRACT

In view of the rapidly changing hardware technology along with the quality and quantity of software and general attitudes toward educational technology, the configuration of the Audio-Visual Distribution System and the Science and Engineering Library (SEL) should be flexible enough to incorporate these variables. SEL has made significant thrusts toward the integration of its media and print collections and is making consistent effort towards collection development. The library's goal should be convenient and quick access to local and remote audiovisual materials for independent and remedial work. It should also act as a catalyst in the production of locally originated instructional materials. To meet these objectives, it is recommended that the Radio-Frequency Distribution System (RF) be adopted to provide access to AV materials. The RF system leaves open the option of accessing an automatic gear at a later time, and the film chain, one of the most costly components of RF, can also be used in local productions. Flowcharts and equipment lists are appended to this report. (Author/SL)

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SCIENCE AND ENGINEERING LIBRARY

MEDIA SERVICE DEPARTMENT

- A Planning and Development Proposal -

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IR 001 778

In view of the rapidly changing hardware technology along with the quantity and quality of software and general attitudes towards educational technology, the configuration of the Audio-Visual Distribution System at the Science & Engineering Library should be flexible enough to incorporate these variables. These may not be easy to project or quantify but we must start by defining our objectives and then design a strategy which could get us there. The question is what kind of service does the library anticipate in the near future? - Before we answer the question, two major aspects come into play:

1. Traditional Printed Media vs. Integrated Media in the Library. Some librarians are unsure of whether audio-visual materials could be easily integrated with the traditional print media and feel that the non-print media should be handled by a separate and specialized department.[1] Others have wholeheartedly adopted the new role of the University library as a "learning center" and as the Carnegie Commission Report defines it, "catalyst of continuing innovation and development in the use of technology by colleges and universities" . . . "information centers charged with preserving knowledge in the increasingly variable forms in which it can be recorded as indispensable components of any efforts to full utilize instructional technology."[2]

Instructional technology has enormous potential as a tool for individualized instruction. New formats such as the videocassette greatly facilitate media integration. You can treat a cassette very much like a book! The promises of the videodisc are even greater; a most economical and terribly efficient storage device. Libraries could

and should seize the challenge of its creative application.

The Science and Engineering Library has made significant thrusts toward media integration, and is making consistent effort towards collection development. Its collection consists of an array of audio-visual formats such as films, film loops, film strips, audio-tapes, videotapes, and is presently introducing the color videocassette. Becker and Hayes Report recommends that SEL be treated as a special collection, "having the library assume the responsibility for acquisition, storage, and distribution of audio-visual materials and of its own dial-access."[3]

2. Centralization vs. Decentralization of Instructional Media on Campus. As of 1972, a new administrative pattern was established: The Instructional Communication Center no longer reports to the Director of Libraries. It reorganized as a separate unit and reports in parallel to the Libraries to an academic Vice President. Although there is a noticeable trend towards the merging of libraries and media centers, the trend on our campus has been in the other direction.

Although it is hard to tell which trend is healthier for education, it is obvious that the new trend towards reorganization under a new breed of administrator - usually titled "director of learning resources" is predominant in more progressive universities, where educational technology is having a stronger impact.

Our local ICC apparently suffers from a lack of professional staff and apparently also suffers because their director is serving on a part-time basis only. At SUNYAB two tendencies are apparent: on one hand we have the "departmental" audio-visual facilities which have

developed out of a demand to satisfy local needs; and on the other hand, we have ICC aspiring to total responsibility for audio-visual materials on campus. Should ICC undertake such responsibility before they are actually ready for it, the effects would most likely be detrimental. But if both the library and ICC fully realize the relative benefits of both centraiization and decentralization, fruitful cooperation can become a practical reality.

Going back to the question: What is going to be the nature of materials and services provided by SEL? Will the system cater to independent study or to group work; will it include direct teaching, e.g., courses for credit; or will it be used for supplementary, enrichment remedial education? Setting up objectives, especially long term objectives is essential in system selection decision-making. According to Becker and Hayes Report computers will be used in certain library operations, but there is no mention of the computer as an instruction tool; it does provide, however, for "adequate ductwork capable of distributing coaxial cable for computer terminal at specified service locations and eventually to all carrels."[4]

Objectives: Convenient and speedy access to local and remote A-V materials - which should increase use. A primary objective should be that of providing materials and services for individualized study. Secondly, not "secondary" is materials and remedial education, as well as supplementary and of an enrichment nature, and "teaching aids" for classroom use. With the advent of engineering television networks such as TAGER in Texas and GENESYS in Florida, more and more taped

lectures by leading scholars become available as well as "learning packages" and fully accredited "learning sequences." When increasing appreciation and demand for these materials will be felt, the library should be ready to respond to the developing needs. These would free the teacher from delivering routine information, e.g., recitations, drill, etc., and leave more time for seminars, theoretical and judgemental work. These also present an obvious potential for money-saving. However, educational television being still in an experimental stage, we must not rely too heavily on this goal. Lastly, the library can and should engage in a very important function: that of acting as a catalyst in the production of locally originated instructional materials.

Distribution Systems. Although the library has set a goal for individualized learning, it cannot be expected to provide direct* and exclusive* access for each individual student or faculty member (the projected growth of undergraduate, graduate and faculty members in science and engineering by 1976 is approximately 4,600!). Until such time when technology will allow for cheap duplication of audio and videocassette for use comparative to that of current books, we must resort to a central distribution system.

Distribution systems vary greatly in complexity, sophistication, size, capability and cost. Criteria for selecting the type of access to audio-visual materials is discussed at length in Tickton.[5] My task was to select the system or combination of systems which will best meet our educational objectives.

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*see definitions on last page.

After having done some in-depth research, carried out correspondence, and personal interviews with A-V Systems designers and managers, made a few on-site vists and consulted our local A-V dealers and local ICC, I grew strongly in favor of a distribution system which retains many of the desired features of the dial-access system and which has found successful applications in many schools. It is known as Radio-Frequency Distribution System, or simply "RF". I cite below some comments on the RF:

> "A considerable saving can be made on the switching mechanism if a regular T.V. set is used with channel 2-13 tuned to the particular program sources. This eliminates the cost of switching gear but requires the addition of a modulator for each program source. The great majority of the desired features of the system could be obtained without the use of the traditional dial-access."[6] "If the automatic switching equipment were eliminated from the system, the manual means were substituted, it would be possible to accomplish the great majority of functions provided by the dial access system.. . . The major compromise appeared to be that the speed of response of the system to a request for materials would be less than with an automated system."[7]

The RF would acquire greater flexibility by using imaginative programming /arrangements, assigned time segments to individual channels and extended group use of basic programs. Also, the system leaves open the option of accessing an automatic gear (used in dial-access) at a later time if the need arises.

Since the RF lends itself mostly to scheduled programs, provision should be made for partial direct use when exclusive* and random* use is desired for independent study. For the beginning, a number of 6-10 cassette playback machines will be needed. The student/faculty will check out the cassette very much as he would a book on reserve! The direct

mode will greatly enhance the individualized learning concept.

A third mode is the ICC "remote access" using separate cable and staggered channel numbers. SEL will use channels 2, 4, 6, 8, 10, 12, while ICC will use 3, 5, 7, 9, 11. Looking at the diagram, a number of switches will provide great flexibility to the system: SEL has the capability to connect at will the carrel assigned to ICC programs sources should the need arise. Also, it can gain access to the ICC frequencies (channels), selectively: to group viewing areas, to classrooms, to carrels. Should the ICC program sources be in greater demand at any given time, the switching system provides for the reverse capability as well. The system also has a built-in capability for growth: with the use of adequate filters channel interference can be eliminated and a number of six additional channels could be gained on both the SEL and ICC receiving stations.

Color vs. Black and White. Many of the science and technology programs lend themselves to color treatment. Besides, it is predictable that "technological advances and cost reductions in color television equipment will shortly make black and white equipment absolete."[8]

Our system should have capability for both color and black and white program transmission.

Sound: We do not expect to have as great a demand for audio programs as much as we will for audio-visual programs. Audio-tape recorders available for exclusive audio distribution should satisfy our needs.

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*see definition

The Operation of the RF Distribution System. The system will have two major components: 1) The SEL local programming, and 2) ICC remote programming. As I have mentioned earlier, we should also have a partial supplementary direct mode consisting of individually operated cassette playbacks for independent study to add more flexibility to the system. The SEL local programming will have the following major components: a) a program origination station "control room" housing such equipment as videocassette players, videotape players, film chain, etc. and instructional software, b) coaxial cable for inter-connecting the origination station to the remote stations, c) remote receiving stations (carrels, classrooms, group viewing areas) containing the modulating equipment, television monitors, audio headsets.

Service Requests: The library will accommodate two basic types of requests: a) on-demand requests for specific programs for the independent study mode can be placed by filling out a request form or by phone, b) to facilitate channel time assignments and extended use of basic programs on the RF, advance requests should be encouraged and programs should be publicized several days in advance.

The videocassette playback is very simple to operate and one can hardly "go wrong," however, "how to" instructions should be given whether in print or presented on videotape. Ideally, the cassette playbacks should be located in proximity to the checkout clerk.

Hours: We should be using the first semester as a "testing period" in order to determine the most adquate schedule for our needs. At the beginning, I propose a total of 50 hours per week - the library being open two evening a week beyond the basic daily schedule.

Format: For economy's and efficiency's sake, as well as for the sake of escaping the chaos of existing formats, we should be adopting the videocassette as a standard "output"* format as much as possible, while we should reserve greater freedom of choice in the "input"* formats.[9]

Personnel for audio-visual acquisitions, cataloging and distribution services. The head of the SEL Media Service Department will depend on the following personnel for a successful operation:

- a full time technician or "television engineer" in charge of equipment maintenance. This will be a responsible position since the care and maintenance of expensive eqipment is absolutely vital. The same person may be qualified to operate a T.V. console for production needs.
- a full time "program traffic manager" in charge of keeping a file of requiests, keeping track of the acquisitions flow - including rentals, cataloging, publicizing the CCTV programs.
- reliable work-study personnel could be used for general operations, material filing and storing, shipping and checking out materials.
- secretary to assist with correspondence, telephone calls, maintaining personnel attendance records, processing requisitions, etc.

LOCAL PROGRAM ORIGINATION

Among all academic disciplines, physics and mathematics have taken the lead in the development and utilization of quality instructional programs and materials. However, due to the lack of national planning and coordination the general deficiencies in quantity and quality of software have been felt and their utilization at the university level has been shallow.[10]

Realizing the increasing emphasis on individualized instruction, the scarcity of quality engineering software and the fact that more and more faculty would like to become involved in producing their own instruction programs, the library could and should undertake the challenge of originating - in cooperation with faculty - instructional materials to augment curriculum as well as for "direct" teaching.

The process of locally originating educational programs can become an unique educational experience in itself: professors, librarians, technicians and students learning to work as a team.

Although the rapid change in the state-of-the-art and the cost of television production equipment would prevent me from recommending specific types of studio cameras, consoles, lighting, and sound equipment, general guidelines can be drawn for space and equipment specifications.

The film chain, which happens to be one of the most costly components of the RF system can also be used for production purposes. As I have shown above, the "television engineer" can have shared duties - one at the studio console. Also, the head of the Media Department should ideally have some production experience to allow him/her to act as "director" as well as coordinate production.

The T.V. cameras are simple to operate. Two students can be trained in their use.

The following equipment list is a "bare bones" outline which does not take into account the innumerable small items which may be required to make the system work. The outline is submitted as a starting point, a place to begin. Hopefully, ICC should keep us in touch with

new developments. As new information becomes available we may want to make changes.

For example, in the list of "Program Origination Studio," I am considering a very new product, but which is very favorably received: the new VO-2850 Sony U-matic color videocassette recorder/player with electronic editing. In my list, however, I do not give manufacturer's names or models. These should be decided at a later time.

Additional "Input" Media Formats. As I have shown above, we should be retaining a greater freedom of selecting the most appropriate or most convenient production media.

Since we already own some of the basic components for a slide and of a 16 mm sync-sound film product, the addition of the following components would allow us to have complete functional systems.*

Portable A-V Equipment. Since it is not advisable to remove the projectors which make up the film chain, for alternate use, portable projectors will be required.*

Space Requirements. While we feel privileged in terms of the space available for the media services, we are faced with the fact that the space was not especially designed for this purpose. In order to have more flexibility, we were compelled to request some architectural changes. The Office of the Vice President for Facilities Planning has agreed to the removal of the walls in the central area; they haven't made, however, any commitment to add ceiling tracks for sliding accoustical walls. This leaves us at a definite disadvantage, especially since ceiling tracks and

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*see equipment list

sliding accoustical curtains will be needed for creating "modular" viewing areas. If for reasons I cannot foresee, we will end up not using the tracks, their presence on the ceilings should not create any obstacles. Attached are copies of correspondence.

Carpeting. We must insure that the area is carpeted in order to minimize sound "pollution."

DEFINITIONS[11, 12]

Direct access: individual access to playback machines as oposed to

Remot access: program sources are in a different location than the receiving stations.

Random access: selected material available at discretion and from the beginning as distinguished from

Scheduled access: viewing on a prearranged schedule basis.

Exclusive access: complete control of playback, able to stop and rewind at discretion.

Common access: as oposed to exclusive access, implies group viewing.

Input format: medium used to actually make productions.

Output format: the medium in which we choose to show those products.

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[8]Quick and Wolff, Small Studio Videotape Production, Addison & Wesley Co.,1972,p. 29

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[11]Tickton, p. 318

[12]Seymour, p. 14

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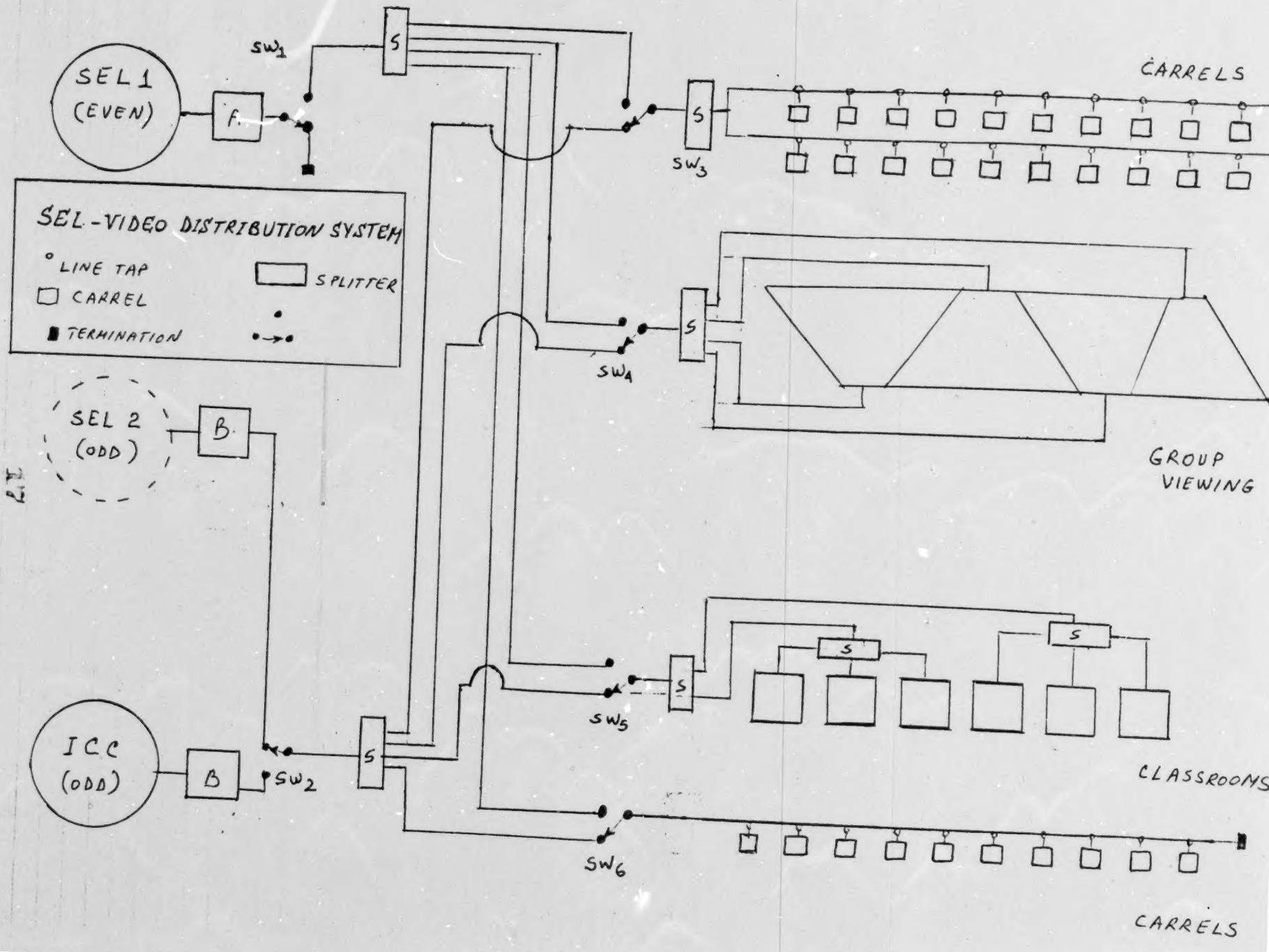
SEL 1
(EVEN)
F.
SW1
S
SW3
CARRELS
SEL-VIDEO DISTRIBUTION SYSTEM
LINE TAP
SPLITTER
CARREL
TERMINATION
SW4
GROUP
VIEWING
SEL 2
(ODD)
B
ICC
(ODD)
B
SW2
SW5
CLASSROOMS
SW6
CARRELS

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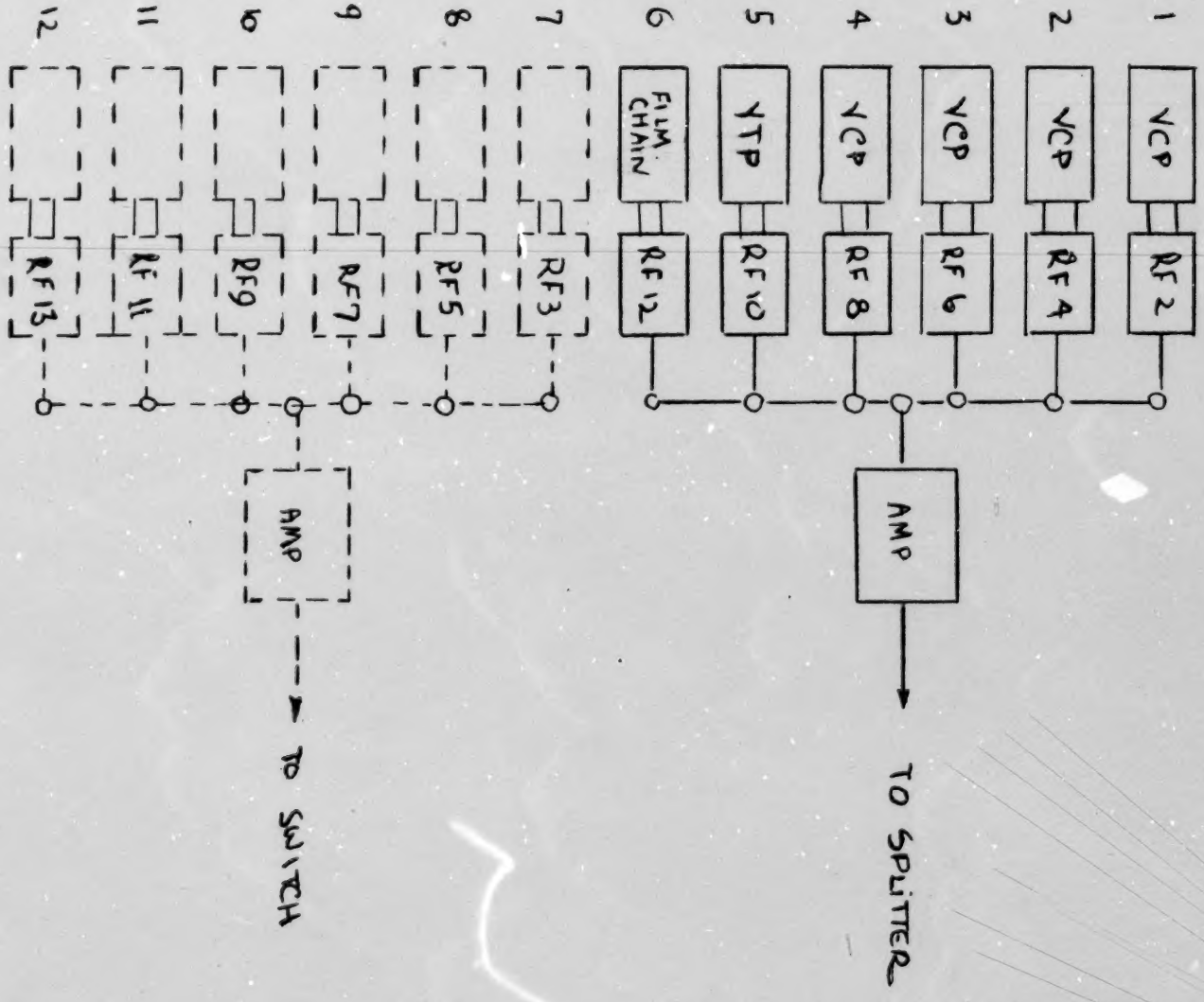
SCIENCE & ENGINEERING LIBRARY
VIDEO SOURCE CENTER



VIDEO DISTRIBUTION SYSTEM

EQUIPMENT REQUIREMENTS

	Quant. Req'd.
I. Remote Access	
A. Sources (6)	
1. Video Cassette Players	4
2. Video Tape Players, 1/2 inch	1
3. Film Chain, to include:	1
a. Optical Multiplexer, 1 ea	
b. 16 mm. Projector, ea	
c. Super-8 Projector, 1 ea	
d. 35 mm. Slide Projector 1 ea	
4. RF Modulators, Various Channels	6
5. RF Signal Combiners, Various Values	7
6. Wideband RF Amplifier	1
B. Alternate Sources (for ICC carrels)	
1. Video Cassette Players	As Req'd
2. Video Tape Players, 1/2 inch	As Req'd
3. Film Chain	As Req'd
4. RF Modulators, Various Channels	Sum of 1, 2 and 3
5. RF Signal Combiners, Various Values	Item 4 plus one
C. Distribution System	
1. SEL Carrels (20)	
a. 2-way Splitter	1
b. Tap-offs, Various Values	20
c. MATV Cable	As Req'd
d. On-Off Switches	1
2. Group Viewing Areas (4)	
a. 4-way splitter	1
b. Television Projection System	4
c. On-Off Switches	1
3. Classrooms (6)	
a. 2-way Splitter	1
b. 4-way Splitter	2
c. MATV Cable	As Req'd
d. On-Off Switches	1
4. I.C.C. Carrels (10)	
a. Source Switch	2
b. Tap-offs, Various Values	10
c. MATV Cable	As Req'd

EQUIPMENT REQUIREMENTS (CONT'D)

D. SEL Carrels (20)	
1. 75-300 Ohm Matching Transformers	20
2. MATV Cable	As Req'd
3. Small Screen TV Receivers, Color	20
4. Headsets	20
E. Classrooms (6)	
1. One Receiver Per Room	
a. 75-300 Ohm Matching Transformers	6
b. MATV Cable	As Req'd
c. Large Screen TV Receivers, Color	6
d. Mount or Stand for TV Receivers	6
2. Two Receivers Per Room (Alternate)	
a. 75-300 Ohm Matching Transformers	12
b. MATV Cable	As Req'd
c. 2-way Splitter	6
d. Large Screen TV Receiver, Color	12
e. Mount or Stand for TV Receivers	12
F. ICC Carrels (10)	
1. 75-300 Ohm Matching Transformers	10
2. MATV Cable	As Req'd
3. Small Screen TV Receiver, Color	10
4. Headsets	10
Additional 4-Way On-Off Switches	2

A-V DISTRIBUTION SYSTEM

EQUIPMENT SUMMARY

Item No.	Description	Quantity Required Primary	Alternate
1	Videocassette Player	4	As Req'd
2	Videotape Player, 1/2 inch	1	As Req'd
3	Film Chain	1	As Req'd
4	RF Modulator, Various Channels	6	Sum of 1, 2, and 3
5	Signal Combiners, Various Values	7	Item 4 plus one
6	Wideband RF Amplifier	1	None
7	4-Way Splitter	5	None
8	2-Way Splitter	1	6 Add'l
9	Tap-offs, Various Values	30	None
10	MATV Cable	As Req'd	As Req'd
11	75-300 Ohm Matching Transformer	30	12 Add'l
12	TV Projector System	4	None
13	Small Screen TV Receiver, Color	30	None
14	Large Screen TV Receiver, Color	6	6 Add'l
15	Mount or Stand for Large Receivers	6	6 Add'l
16	Source Switch	2	None
17	On-Off Switches	6	4 Add'l
18	Headsets	36	None
19	Audiocassette playback	6	4 Add'l
	SOUND		
	Audiocassette playback, color	6	4 Add'l
	Headsets	6	4 Add'l
	INDEPENDENT STUDY		
	Videocassette Playbacks, color	6	4 Add'l
	Headphones	6	4 Add'l

SLIDE PRODUCTION

Description	Quantity
Right angle viewer	1
Assorted filters	3
Titler	1
Electronic Flash unit	1
Light meter	1

16MM. SYNC-SOUND FILM PRODUCTION

16mm film camera	1
Sound Recorder	1
Crystal Sync	1
Editor/Viewer with Sound Head	1
Splicer	1

NON-STUDIO RECORDINGS

Port-a-Pack (1/2" videotape recorder/player and camera)	1

PORTABLE A-V EQUIPMENT

35mm. slide projector with lap dissolve	2
Super 8mm. film projector, reel to reel	1